



IFWO

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/10/665,990A

DATE: 08/20/2004
 TIME: 10:38:11

Input Set : A:\PTO.LM.txt
 Output Set: N:\CRF4\08202004\J665990A.raw

4 <110> APPLICANT: Apicella, Michael A.
 5 Edwards, Jennifer L.
 7 <120> TITLE OF INVENTION: Vaccine and compositions for the prevention and treatment of
 Neisseria
 8 infections
 10 <130> FILE REFERENCE: 17023-031001
 12 <140> CURRENT APPLICATION NUMBER: US 10/665,990A
 13 <141> CURRENT FILING DATE: 2003-09-19
 15 <150> PRIOR APPLICATION NUMBER: US 10/621,184
 16 <151> PRIOR FILING DATE: 2003-07-15
 18 <150> PRIOR APPLICATION NUMBER: US 10/066,551
 19 <151> PRIOR FILING DATE: 2002-01-31
 21 <150> PRIOR APPLICATION NUMBER: US 60/344,452
 22 <151> PRIOR FILING DATE: 2001-10-23
 24 <150> PRIOR APPLICATION NUMBER: US 60/310,356
 25 <151> PRIOR FILING DATE: 2001-08-06
 27 <150> PRIOR APPLICATION NUMBER: US 60/266,070
 28 <151> PRIOR FILING DATE: 2001-01-31
 30 <160> NUMBER OF SEQ ID NOS: 32
 32 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 35 <210> SEQ ID NO: 1
 36 <211> LENGTH: 2015
 37 <212> TYPE: PRT
 38 <213> ORGANISM: Neisseria gonorrhoeae
 40 <400> SEQUENCE: 1
 41 Met Asn Lys Gly Leu His Arg Ile Ile Phe Ser Lys Lys His Ser Thr
 42 1 5 10 15
 43 Met Val Ala Val Ala Glu Thr Ala Asn Ser Gln Gly Lys Gly Lys Gln
 44 20 25 30
 45 Ala Gly Ser Ser Val Ser Val Ser Leu Lys Thr Ser Gly Asp Leu Cys
 46 35 40 45
 47 Gly Lys Leu Lys Thr Thr Leu Lys Thr Leu Val Cys Ser Leu Val Ser
 48 50 55 60
 49 Leu Ser Met Val Leu Pro Ala His Ala Gln Ile Thr Thr Asp Lys Ser
 50 65 70 75 80
 51 Ala Pro Lys Asn Gln Gln Val Val Ile Leu Lys Thr Asn Thr Gly Ala
 52 85 90 95
 53 Pro Leu Val Asn Ile Gln Thr Pro Asn Gly Arg Gly Leu Ser His Asn
 54 100 105 110
 55 Arg Tyr Thr Gln Phe Asp Val Asp Asn Lys Gly Ala Val Leu Asn Asn
 56 115 120 125
 57 Asp Arg Asn Asn Pro Phe Leu Val Lys Gly Ser Ala Gln Leu Ile
 58 130 135 140
 59 Leu Asn Glu Val Arg Gly Thr Ala Ser Lys Leu Asn Gly Ile Val Thr

(p5.6)

ENTERED

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60	145	150	155	160
61	Val	Gly	Gly	Gln
62	Lys	Ala	Asp	Val
63	Ile	Ile	Ala	Asn
64	Asn	Gly	Gly	Gly
65	Phe	Lys	Asn	Val
66	Gly	Gly	Gly	Gly
67	Arg	Gly	Gly	Asp
68	Thr	Ala	Ala	Gly
69	Asp	Tyr	Thr	Gly
70	225	230	235	240
71	Gly	Gly	Val	Ala
72	Leu	Ala	Arg	Val
73	Gly	Asp	Ala	Leu
74	245	250	255	260
75	Val	Tyr	Ser	Gly
76	Asp	Ala	Gly	Asp
77	260	265	270	275
78	Thr	Ile	Ala	Leu
79	Leu	Asp	Ala	Gly
80	275	280	285	290
81	Asp	Ser	Ile	Thr
82	Leu	Ile	Ala	Asn
83	Gly	Asn	Glu	Gly
84	290	295	300	305
85	Thr	Leu	Glu	Asn
86	310	315	320	325
87	Ala	Ala	Arg	Ile
88	330	335	340	345
89	Gly	Ile	Gly	Asp
90	335	340	345	350
91	Thr	Leu	Ser	Ile
92	355	360	365	370
93	Asn	Asn	Gly	Thr
94	370	375	380	385
95	Asn	Asn	Arg	Thr
96	385	390	395	400
97	Gly	Asn	Pro	Val
98	395	400	405	410
99	Gly	Asn	Ala	Tyr
100	405	410	415	420
101	Gly	Asn	Gly	Ser
102	420	425	430	435
103	Gly	Asn	Arg	Ile
104	435	440	445	450
105	Ile	Ile	Ile	Glu
106	450	455	460	465
107	Asn	Asn	Asn	Asn
108	465	470	475	480
109	Gly	Gly	Gly	Gly
110	485	490	495	500
111	Asp	Asp	Asn	Ile
112	500	505	510	515
113	Asn	Asn	Asn	Asn
114	515	520	525	530
115	Tyr	Val	His	Gly
116	530	535	540	535

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109 Asp Lys Asp Leu Ser Ala Ala Ser Ile His Leu Lys Ser Asp Asn Ala
110 545 550 555 560
111 Ala His Ile Thr Gly Thr Ser Lys Thr Leu Thr Ala Ser Lys Asp Met
112 565 570 575
113 Gly Val Glu Ala Gly Leu Leu Asn Val Thr Asn Thr Asn Leu Arg Thr
114 580 585 590
115 Asn Ser Gly Asn Leu His Ile Gln Ala Ala Lys Gly Asn Ile Gln Leu
116 595 600 605
117 Arg Asn Thr Lys Leu Asn Ala Ala Lys Ala Leu Glu Thr Thr Ala Leu
118 610 615 620
119 Gln Gly Asn Ile Val Ser Asp Gly Leu His Ala Val Ser Ala Asp Gly
120 625 630 635 640
121 His Val Ser Leu Leu Ala Asn Gly Asn Ala Asp Phe Thr Gly His Asn
122 645 650 655
123 Thr Leu Thr Ala Lys Ala Asp Val Asn Ala Gly Ser Val Gly Lys Gly
124 660 665 670
125 Arg Leu Lys Ala Asp Asn Thr Asn Ile Thr Ser Ser Ser Gly Asp Ile
126 675 680 685
127 Thr Leu Val Ala Gly Asn Gly Ile Gln Leu Gly Asp Gly Lys Gln Arg
128 690 695 700
129 Asn Ser Ile Asn Gly Lys His Ile Ser Ile Lys Asn Asn Gly Gly Asn
130 705 710 715 720
131 Ala Asp Leu Lys Asn Leu Asn Val His Ala Lys Ser Gly Ala Leu Asn
132 725 730 735
133 Ile His Ser Asp Arg Ala Leu Ser Ile Glu Asn Thr Lys Leu Glu Ser
134 740 745 750
135 Thr His Asn Thr His Leu Asn Ala Gln His Glu Arg Val Thr Leu Asn
136 755 760 765
137 Gln Val Asp Ala Tyr Ala His Arg His Leu Ser Ile Thr Gly Ser Gln
138 770 775 780
139 Ile Trp Gln Asn Asp Lys Leu Pro Ser Ala Asn Lys Leu Val Ala Asn
140 785 790 795 800
141 Gly Val Leu Ala Leu Asn Ala Arg Tyr Ser Gln Ile Ala Asp Asn Thr
142 805 810 815
143 Thr Leu Arg Ala Gly Ala Ile Asn Leu Thr Ala Gly Thr Ala Leu Val
144 820 825 830
145 Lys Arg Gly Asn Ile Asn Trp Ser Thr Val Ser Thr Lys Thr Leu Glu
146 835 840 845
147 Asp Asn Ala Glu Leu Lys Pro Leu Ala Gly Arg Leu Asn Ile Glu Ala
148 850 855 860
149 Gly Ser Gly Thr Leu Thr Ile Glu Pro Ala Asn Arg Ile Ser Ala His
150 865 870 875 880
151 Thr Asp Leu Ser Ile Lys Thr Gly Gly Lys Leu Leu Leu Ser Ala Lys
152 885 890 895
153 Gly Gly Asn Ala Gly Ala Pro Ser Ala Gln Val Ser Ser Leu Glu Ala
154 900 905 910
155 Lys Gly Asn Ile Arg Leu Val Thr Gly Glu Thr Asp Leu Arg Gly Ser
156 915 920 925
157 Lys Ile Thr Ala Gly Lys Asn Leu Val Val Ala Thr Thr Lys Gly Lys

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158	930	935	940
159	Leu Asn Ile Glu Ala Val Asn Asn Ser Phe Ser Asn Tyr Phe Pro Thr		
160	945	950	955
161	Gln Lys Ala Ala Glu Leu Asn Gln Lys Ser Lys Glu Leu Glu Gln Gln		960
162	965	970	975
163	Ile Ala Gln Leu Lys Lys Ser Ser Pro Lys Ser Lys Leu Ile Pro Thr		
164	980	985	990
165	Leu Gln Glu Glu Arg Asp Arg Leu Ala Phe Tyr Ile Gln Ala Ile Asn		
166	995	1000	1005
167	Lys Glu Val Lys Gly Lys Lys Pro Lys Gly Lys Glu Tyr Leu Gln Ala		
168	1010	1015	1020
169	Lys Leu Ser Ala Gln Asn Ile Asp Leu Ile Ser Ala Gln Gly Ile Glu		
170	1025	1030	1035
171	Ile Ser Gly Ser Asp Ile Thr Ala Ser Lys Lys Leu Asn Leu His Ala		1040
172	1045	1050	1055
173	Ala Gly Val Leu Pro Lys Ala Ala Asp Ser Glu Ala Ala Ile Leu		
174	1060	1065	1070
175	Ile Asp Gly Ile Thr Asp Gln Tyr Glu Ile Gly Lys Pro Thr Tyr Lys		
176	1075	1080	1085
177	Ser His Tyr Asp Lys Ala Ala Leu Asn Lys Pro Ser Arg Leu Thr Gly		
178	1090	1095	1100
179	Arg Thr Gly Val Ser Ile His Ala Ala Ala Leu Asp Asp Ala Arg		
180	1105	1110	1115
181	Ile Ile Ile Gly Ala Ser Glu Ile Lys Ala Pro Ser Gly Ser Ile Asp		1120
182	1125	1130	1135
183	Ile Lys Ala His Ser Asp Ile Val Leu Glu Ala Gly Gln Asn Asp Ala		
184	1140	1145	1150
185	Tyr Thr Phe Leu Lys Thr Lys Gly Lys Ser Gly Lys Ile Ile Arg Lys		
186	1155	1160	1165
187	Thr Lys Phe Thr Ser Thr Arg Asp His Leu Ile Met Pro Ala Pro Val		
188	1170	1175	1180
189	Glu Leu Thr Ala Asn Gly Ile Thr Leu Gln Ala Gly Gly Asn Ile Glu		
190	1185	1190	1195
191	Ala Asn Thr Thr Arg Phe Asn Ala Pro Ala Gly Lys Val Thr Leu Val		1200
192	1205	1210	1215
193	Ala Gly Glu Glu Leu Gln Leu Leu Ala Glu Glu Gly Ile His Lys His		
194	1220	1225	1230
195	Glu Leu Asp Val Gln Lys Ser Arg Arg Phe Ile Gly Ile Lys Val Gly		
196	1235	1240	1245
197	Lys Ser Asn Tyr Ser Lys Asn Glu Leu Asn Glu Thr Lys Leu Pro Val		
198	1250	1255	1260
199	Arg Val Val Ala Gln Thr Ala Ala Thr Arg Ser Gly Trp Asp Thr Val		
200	1265	1270	1275
201	Leu Glu Gly Thr Glu Phe Lys Thr Thr Leu Ala Gly Ala Asp Ile Gln		1280
202	1285	1290	1295
203	Ala Gly Val Gly Glu Lys Ala Arg Val Asp Ala Lys Ile Ile Leu Lys		
204	1300	1305	1310
205	Gly Ile Val Asn Arg Ile Gln Ser Glu Glu Lys Leu Glu Thr Asn Ser		
206	1315	1320	1325

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207 Thr Val Trp Gln Lys Gln Ala Gly Arg Gly Ser Thr Ile Glu Thr Leu
208 1330 1335 1340
209 Lys Leu Pro Ser Phe Glu Ser Pro Thr Pro Pro Lys Leu Ser Ala Pro
210 1345 1350 1355 1360
211 Gly Gly Tyr Ile Val Asp Ile Pro Lys Gly Asn Leu Lys Thr Glu Ile
212 1365 1370 1375
213 Glu Lys Leu Ser Lys Gln Pro Glu Tyr Ala Tyr Leu Lys Gln Leu Gln
214 1380 1385 1390
215 Val Ala Lys Asn Ile Asn Trp Asn Gln Val Gln Leu Ala Tyr Asp Arg
216 1395 1400 1405
217 Trp Asp Tyr Lys Gln Glu Gly Leu Thr Glu Ala Gly Ala Ala Ile Ile
218 1410 1415 1420
219 Ala Leu Ala Val Thr Val Val Thr Ser Gly Ala Gly Thr Gly Ala Val
220 1425 1430 1435 1440
221 Leu Gly Leu Asn Gly Ala Ala Ala Ala Thr Asp Ala Ala Phe Ala
222 1445 1450 1455
223 Ser Leu Ala Ser Gln Ala Ser Val Ser Phe Ile Asn Asn Lys Gly Asp
224 1460 1465 1470
225 Val Gly Lys Thr Leu Lys Glu Leu Gly Arg Ser Ser Thr Val Lys Asn
226 1475 1480 1485
227 Leu Val Val Ala Ala Ala Thr Ala Gly Val Ala Asp Lys Ile Gly Ala
228 1490 1495 1500
229 Ser Ala Leu Asn Asn Val Ser Asp Lys Gln Trp Ile Asn Asn Leu Thr
230 1505 1510 1515 1520
231 Val Asn Leu Ala Asn Ala Gly Ser Ala Ala Leu Ile Asn Thr Ala Ile
232 1525 1530 1535
233 Asn Gly Gly Ser Leu Lys Asp Asn Leu Gly Asp Ala Ala Leu Gly Ala
234 1540 1545 1550
235 Ile Val Ser Thr Val His Gly Glu Val Ala Ser Lys Ile Lys Phe Asn
236 1555 1560 1565
237 Leu Ser Glu Asp Tyr Ile Thr His Lys Ile Ala His Ala Ile Ala Gly
238 1570 1575 1580
239 Cys Ala Ala Ala Ala Asn Lys Gly Lys Cys Gln Asp Gly Ala Ile
240 1585 1590 1595 1600
241 Gly Ala Ala Val Gly Glu Ile Val Gly Glu Ala Leu Thr Asn Gly Lys
242 1605 1610 1615
243 Asn Pro Ala Thr Leu Thr Ala Lys Glu Arg Glu Gln Ile Leu Ala Tyr
244 1620 1625 1630
245 Ser Lys Leu Val Ala Gly Thr Val Ser Gly Val Val Gly Gly Asp Val
246 1635 1640 1645
247 Asn Thr Ala Ala Asn Ala Ala Lys Val Ala Ile Glu Asn Asn Leu Leu
248 1650 1655 1660
249 Ser Gln Glu Glu Tyr Ala Leu Arg Glu Lys Leu Ile Lys Lys Ala Lys
250 1665 1670 1675 1680
251 Gly Lys Gly Leu Leu Ser Leu Asp Trp Gly Ser Leu Thr Glu Gln Glu
252 1685 1690 1695
253 Ala Arg Gln Phe Ile Tyr Leu Ile Glu Lys Asp Arg Tyr Ser Asn Gln
254 1700 1705 1710
255 Leu Leu Asp Arg Tyr Gln Lys Asn Pro Ser Ser Leu Asn Asn Gln Glu

RAW SEQUENCE LISTING ERROR SUMMARY DATE: 08/20/2004
PATENT APPLICATION: US/10/665,990A TIME: 10:38:12

Input Set : A:\PTO.LM.txt
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Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:19; N Pos. 649,714,717,739,748,757,779,797,806,808,811,844,915,951,964
Seq#:19; N Pos. 988

VERIFICATION SUMMARY

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DATE: 08/20/2004

TIME: 10:38:12

Input Set : A:\PTO.LM.txt

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L:501 M:283 W: Missing Blank Line separator, <400> field identifier
L:1277 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:600
L:1278 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:660
L:1279 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:720
L:1280 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:780
L:1281 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:840
L:1282 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:900
L:1283 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:960